This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1        1.     (Currently Amended) A method of processing traffic received from

2  an InfiniBand node via a first queue pair, comprising:

3        selecting a traffic entry in an InfiniBand receive queue, wherein said

4  traffic entry comprises one of:

5            a Send command comprising an encapsulated communication;

6            a Send command comprising ~~an RDMA~~ <u>a remote direct memory</u>

7  <u>access (RDMA)</u> Read descriptor; and

8            an RDMA Read response comprising a response to an RDMA

9  Read request;

10       if said selected traffic entry comprises a Send command comprising an

11  RDMA Read descriptor:

12            issuing a first RDMA Read request to retrieve one or more

13  portions of a communication described by said RDMA Read descriptor;

14            in a linked list corresponding to the first queue pair, adding an

15  entry corresponding to said first RDMA Read request, said entry

16  comprising a first sequence number <u>corresponding to a first expected</u>

17  <u>response to said first RDMA Read request</u> and a last sequence number

18  <u>corresponding to a last expected response to said first Read request,</u> ~~that~~

19  ~~identify a range of sequence numbers associated with expected responses~~

20  ~~to said first RDMA Read request~~ and optionally comprising a sequence

21  number of the most recently received response or a link to the next <u>entry</u>

22  ~~entry of~~ in the linked list; and

| 23 | in a retry queue, adding an entry corresponding to said first RDMA |
| 24 | Read request; and |
| 25 | if said selected traffic entry comprises an RDMA Read response to said |
| 26 | first RDMA Read request: |
| 27 | identifying a sequence number associated with said RDMA Read |
| 28 | response; |
| 29 | comparing said sequence number to said range of sequence |
| 30 | numbers; |
| 31 | storing said one or more portions of said described communication |
| 32 | to facilitate assembly of said described communication in said queue; and |
| 33 | if said sequence number matches a final sequence number in said |
| 34 | range, retiring in said retry queue said entry corresponding to said first |
| 35 | RDMA Read request. |

| 1 | 2.   (Original) The method of claim 1, further comprising: |
| 2 | forwarding a communication associated with said selected traffic entry, |
| 3 | for transmission on an external communication link, wherein said communication |
| 4 | is one of: |
| 5 | said encapsulated communication; and |
| 6 | said described communication, after said described communication |
| 7 | is assembled. |

| 1 | 3.   (Original) The method of claim 1, further comprising, if said |
| 2 | selected traffic entry comprises an RDMA Read response to said first RDMA |
| 3 | Read request: |
| 4 | if said sequence number does not match said final sequence number, |
| 5 | updating said entry in said linked list to include said sequence number. |

| 1 | 4.   (Original) The method of claim 1, further comprising: |

2   maintaining a single memory structure comprising multiple linked list,

3 including said linked list;

4   wherein each linked list stores entries associated with RDMA Read

5 requests for a different InfiniBand queue pair.


1   5.  (Original) The method of claim 1, further comprising:

2   maintaining a single memory structure for queuing InfiniBand traffic

3 received via multiple virtual lanes and multiple queue pairs, said single memory

4 structure comprising said queue.


1   6.  (Original) The method of claim 5, wherein said queue comprises a

2 linked list of memory buffers within said single memory structure.


1   7.  (Original) The method of claim 1, further comprising:

2   maintaining a head pointer configured to identify a head of said linked list;

3 and

4   maintaining a tail pointer configured to identify a tail of said linked list.


1   8.  (Previously Presented) The method of claim 1, further comprising:

2   maintaining a head pointer configured to identify a head of said queue;

3   maintaining a tail pointer configured to identify a tail of said queue; and

4   maintaining a next traffic entry pointer configured to identify a next entry

5 in said queue to be processed.


1   9.  (Original) The method of claim 8, wherein said tail pointer is

2 configured to identify where in said queue a next traffic entry is to be queued.


1   10.  (Original) The method of claim 1, further comprising, if said

2 selected traffic entry comprises an RDMA Read descriptor:

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3        appending space to a head of said queue;

4        wherein said described communication is assembled in said appended

5    space.


1        11.    (Original) The method of claim 1, further comprising, if said

2    selected traffic entry comprises an RDMA Read response to said first RDMA

3    Read request:

4        dropping an RDMA Read response received out of order; and

5        requesting a retry of said first RDMA Read request.


1        12.    (Currently Amended) A computer readable medium storing

2    instructions that, when executed by a computer, cause the computer to perform a

3    method of processing traffic received from an InfiniBand node via a first queue

4    pair, the method comprising:

5        selecting a traffic entry in an InfiniBand receive queue, wherein said

6    traffic entry comprises one of:

7            a Send command comprising an encapsulated communication;

8            a Send command comprising an RDMA Read descriptor; and

9            an RDMA Read response comprising a response to an RDMA

10        Read request;

11        if said selected traffic entry comprises a Send command comprising an

12    RDMA Read descriptor:

13            issuing a first RDMA Read request to retrieve one or more

14        portions of a communication described by said RDMA Read descriptor;

15            in a linked list corresponding to the first queue pair, adding an

16        entry corresponding to said first RDMA Read request, said entry

17        comprising a first sequence number corresponding to a first expected

18        response to said first RDMA Read request and a last sequence number

19        corresponding to a last expected response numbers that identify a range of

20    ~~sequence numbers associated with expected responses~~ to said first RDMA

21    Read request, and optionally comprising a sequence number of the most

22    recently received response or a link to the next <u>entry</u> ~~entry of~~ in the linked

23    list ; and

24         in a retry queue, adding an entry corresponding to said first RDMA

25    Read request; and

26         if said selected traffic entry comprises an RDMA Read response to said

27    first RDMA Read request:

28         identifying a sequence number associated with said RDMA Read

29    response;

30         comparing said sequence number to said range of sequence

31    numbers;

32         storing said one or more portions of said described communication

33    to facilitate assembly of said described communication in said queue; and

34         if said sequence number matches a final sequence number in said

35    range, retiring in said retry queue said entry corresponding to said first

36    RDMA Read request.


1         13.    (Currently Amended) A method of tracking responses to an

2    RDMA Read operation, the method comprising:

3         issuing an RDMA Read on a first communication connection;

4         identifying a range of sequence numbers to be associated with responses

5    to the RDMA Read;

6         adding an entry to a first linked list corresponding to the first

7    communication connection, said entry comprising:

8         a first <u>sequence number corresponding to a first expected response</u>

9    <u>to the RDMA Read</u> and a last sequence <u>number corresponding to a last</u>

10    <u>expected response to the RDMA Read</u>~~numbers that identify said range of~~

11    ~~sequence numbers~~;

6

12              a latest sequence number received in said range of sequence

13        numbers;

14             optionally a link to the next entry ~~entry of~~ in the linked list;

15        receiving a first RDMA Read response;

16        determining whether a first sequence number associated with the first

17  RDMA Read response matches a last sequence number in said range of sequence

18  numbers; and

19        if said first sequence number does not match said last sequence number,

20  updating said latest sequence number to match said first sequence number.


1        14.    (Original) The method of claim 13, further comprising:

2        if said first sequence number matches said last sequence number, retiring

3  an entry in a retry queue corresponding to the RDMA Read.


1        15.    (Original) The method of claim 13, wherein the first

2  communication connection is an InfiniBand queue pair.


1        16.    (Original) The method of claim 15, wherein:

2        said issuing is performed by an InfiniBand transmit module; and

3        said adding, said determining and said updating are performed by an

4  InfiniBand receive module;

5        the method further comprising:

6        at the InfiniBand transmit module, retrying the RDMA Read if an RDMA

7  Read response associated with said range of sequence numbers is received out of

8  order.


1        17.    (Original) The method of claim 15, wherein:

2        said issuing is performed by an InfiniBand transmit module; and

3        said adding, said determining and said updating are performed by an

4      InfiniBand receive module;

5          the method further comprising, at the InfiniBand transmit module:

6             maintaining a retry queue for tracking RDMA Reads that have not

7      yet completed; and

8             retiring an entry in said retry queue corresponding to the RDMA

9      Read if RDMA Read responses corresponding to said range of sequence

10     numbers are received in order.

1        18.    (Original) The method of claim 17, further comprising, at the

2      InfiniBand transmit module:

3         retrying the RDMA Read if RDMA Read responses corresponding to one

4      or more of said range of sequence numbers are received out of order.

1        19.    (Original) The method of claim 13, wherein said identifying

2      comprises:

3         dividing an amount of data to be received in response to the RDMA Read

4      by a maximum transfer unit in effect for the first communication connection.

1        20.    (Original) The method of claim 13, further comprising:

2         maintaining a single memory structure comprising multiple linked lists

3      corresponding to multiple communication connections, including said first linked

4      list corresponding to the first communication connection.

1        21.    (Original) The method of claim 20, further comprising:

2         for each of the multiple communication connections, including the first

3      communication connection, maintaining pointers to the first entry and the last

4      entry in the corresponding linked list.

1        22.    (Currently Amended) An apparatus for queuing multiple types of

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2 receive traffic in a communication interface, comprising:

3  a queue for queuing multiple types of receive traffic associated with

4 communications to be transmitted from the communication interface;

5  a head pointer configured to identify a head of said queue;

6  a tail pointer configured to identify a tail of said queue, wherein said

7 traffic commands are enqueued at said tail;

8  a next entry pointer configured to identify a next entry in said queue to be

9 processed; and

10  a linked list, wherein each entry in said linked list corresponds to an

11 RDMA Read request issued by the communication interface, and is configured to

12 identify a range of sequence numbers associated with expected responses to the

13 RDMA Read request, wherein the range of sequence numbers are identified by a

14 first sequence number corresponding to a first expected response to the RDMA

15 Read request and a last sequence number corresponding to a last expected

16 responses to the RDMA Read request.


1  23. (Original) The apparatus of claim 22, wherein each entry said

2 linked list is further configured to identify a sequence number of a most recently

3 received response to the RDMA Read request.


1  24. (Original) The apparatus of claim 22, wherein the linked list is one

2 of multiple linked lists, each said linked list corresponding to a separate

3 InfiniBand queue pair.


1  25. (Original) The apparatus of claim 22, further comprising:

2  a retry queue, wherein a retry entry is added to said retry queue for each

3 RDMA Read request issued by the communication interface;

4  wherein a first retry entry in said retry queue corresponding to a first

5 RDMA Read request is retired when said expected responses to the first RDMA

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6    Read request are received.

1        26.    (Original) The apparatus of claim 22, further comprising:

2        a memory configured to store pointers to a first entry and a last entry in

3    said linked list.

1        27.    (Original) The apparatus of claim 22, wherein said queue

2    comprises an assembly area for assembling a communication associated with a

3    first type of receive traffic.

1        28.    (Original) The apparatus of claim 27, wherein said assembly area

2    comprises a portion of said queue delimited by said head pointer and said next

3    entry pointer.

1        29.    (Original) The apparatus of claim 27, wherein said first type of

2    receive traffic is an InfiniBand RDMA Read command comprising a set of

3    RDMA read descriptors configured to identify the communication associated with

4    said first type of receive traffic.

1        30.    (Original) The apparatus of claim 29, wherein a second type of

2    receive traffic is an InfiniBand Send command configured to encapsulate the

3    communication associated with said second type of receive traffic command.

1        31.    (Original) The apparatus of claim 27, wherein:

2    said first type of receive traffic comprises a set of descriptors, wherein

3    each said descriptor is configured to describe a portion of the communication

4    associated with said first type of receive traffic; and

5    the apparatus is configured to issue read requests to retrieve the portions

6    of the communication described by the set of descriptors and assemble said

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7    portions in said assembly area.


1        32.    (Original) The apparatus of claim 22, further comprising:

2        a transmit module configured to transmit the communications associated

3    with said receive traffic;

4        wherein each communication associated with receive traffic is forwarded

5    from said queue to said transmit module after the communication is determined to

6    be complete.


1        33.    (Original) The apparatus of claim 32, wherein a communication is

2    forwarded from said queue to said transmit module by passing to the transmit

3    module a set of pointers delimiting the communication within said queue.


1        34.    (Original) The apparatus of claim 22, wherein said queue

2    comprises a linked list of buffers within a memory structure configured to queue

3    receive traffic for multiple communication connections.


1        35.    (Currently Amended) A communication interface for tracking

2    responses to an InfiniBand RDMA Read request, comprising:

3        for each of one or more active InfiniBand queue pairs, a corresponding

4    linked list, wherein each entry in said linked list is configured to include:

5            a first sequence number corresponding to a first expected response

6            and a last sequence numbers that identify a range of sequence numbers

7            associated with expected responses to an RDMA Read request issued on

8            the corresponding queue pair by the communication interface and a last

9            sequence number corresponding to a last expected response to the RDMA

10           Read request;

11           a previous sequence number, wherein said previous sequence

12           number is a sequence number associated with a most recently received

11

13   response to the RDMA Read request; and

14       optionally a link to the next entry of in said linked list; and

15       for each of the linked lists, pointers to a first entry and a last entry in said

16   linked list.


1       36.     (Original) The communication interface of claim 35, further

2   comprising:

3       a retry queue configured to queue retry entries corresponding to RDMA

4   Read requests issued by the communication interface;

5       wherein an retry entry in said retry queue is retired when a final response

6   to a corresponding RDMA Read request is received, said final response being

7   identified by a final sequence number in said range of sequence numbers.


1       37.     (Original) The communication interface of claim 35, further

2   comprising:

3       a transmit module configured to:

4           issue a first RDMA Read request on a first queue pair; and

5           calculate said range of sequence numbers associated with said

6       expected responses to the first RDMA Read request; and

7       a receive module configured to add an entry, corresponding to the first

8   RDMA Read request, to said corresponding first linked list.


1       38.     (Original) The communication interface of claim 37, wherein said

2   receive module is further configured to:

3       determine a sequence number of a response to the first RDMA Read

4   request; and

5       determine if said sequence number matches a final sequence number in

6   said range of sequence numbers associated with expected responses to the first

7   RDMA Read request.

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1        39.     (Original) The communication interface of claim 38, wherein said

2  receive module is further configured to:

3        determine if said sequence number is out of order.